Some Laplace Transform Pairs of Elementary Functions

Signal	Transform	ROC
$\delta(t)$	1	All s
$u(t)$	$1/s$	Re{s} > 0
$-u(-t)$	$1/s$	Re{s} < 0
$\frac{t^{n-1}}{(n-1)!}u(t)$	$1/s^n$	Re{s} > 0
$-\frac{t^{n-1}}{(n-1)!}u(-t)$	$1/s^n$	Re{s} < 0
$e^{-at}u(t)$	$1/(s+a)$	Re{s} > -a
$-e^{-at}u(-t)$	$1/(s+a)$	Re{s} < -a
$\frac{t^{n-1}}{(n-1)!}e^{-at}u(t)$	$1/(s+a)^n$	Re{s} > -a
$-\frac{t^{n-1}}{(n-1)!}e^{-at}u(-t)$	$1/(s+a)^n$	Re{s} < -a
$\delta(t-T)$	e^{-sT}	All s
$[\sin \omega t]u(t)$	$\omega/(s^2+\omega^2)$	Re{s} > 0
$[\cos \omega t]u(t)$	$s/(s^2+\omega^2)$	Re{s} > 0
$[e^{-at}\sin \omega t]u(t)$	$\omega/((s+a)^2+\omega^2)$	Re{s} > -a
$[e^{-at}\cos \omega t]u(t)$	$(s+a)/((s+a)^2+\omega^2)$	Re{s} > -a
$u_n(t)=\frac{d^n\delta(t)}{dt^n}$	s^n	All s
$u_{-n}(t)=u(t)*u(t)\ldots u(t)$ n times	$\frac{1}{s^n}$	Re{s} > 0